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ABSTRACT

This report presents an analysis of the fiscal ability and effort of counties in Tennessee to support public education with alternative formulas for measuring relative ability to pay. Chapter 1 is a review of related literature that provides a background for tracing the development of the rationales used in fiscal capacity measures. It has two parts. Part one traces the development of fiscal capacity measures and gives special attention to the basic rationales employed. Part two is devoted to a brief analysis of the development of capacity measures employed by the state of Tennessee during the period 1909 to 1977. Chapter 2 develops and presents alternative measures of county fiscal capacity that address the issues of taxpayer equity and student equity. The final chapter develops and presents objective measures of county fiscal efforts expended to support the current operation and maintenance of programs of public education in Tennessee. Fiscal effort, as measured in this study, indicates the extent to which a county is actually using its property and retail sales taxing ability for the purpose of education. (Author/IRT)

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THE FISCAL CAPACITY AND EFFORT OF TENNESSEE COUNTIES TO SUPPORT PROGRAMS OF PUBLIC EDUCATION

By
Benjamin H. Brown, Jr.

Prepared for the
Tennessee School Finance Project
State Department of Education
Nashville, Tennessee
1978

EA 012 287

FOREWORD

This report is the product of one in a series of studies initiated by the Tennessee School Finance Equity Study Project as part of a detailed review of the State's program for financing the public schools, kindergarten through grade twelve. It presents an analysis of the fiscal ability and effort of counties in Tennessee to support public education with alternative formulas for measuring relative ability to pay. Neither the findings, the implications, the conclusions, nor the recommendations are necessarily those supported by the Study Project, the State Department of Education, or the Joint Legislative Committee on Elementary/Secondary School Finance all of whom are cooperating in sponsoring the overall study. This report represents a part of a larger body of knowledge which is being gathered by the Study Project so that viable alternatives can be examined and considered upon their merits. This study along with others conducted for the School Finance Equity Study Project is funded by the U.S. Office of Education, Department of Health, Education and Welfare, under Section 842 of P.L. 93-380. However, the opinions expressed do not necessarily reflect the position or policy of the U.S. Office of Education.

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CHAPTER I

ASSESSING FISCAL CAPACITY AND EFFORT - A BACKGROUND

The increasing strain on the available tax dollar for support of educational programs has reemphasized the need for equitable allocation of State revenues to individual school districts. Accurate and objective measures of the fiscal capacities and effort of local school districts are indigenous to consideration of the equitable distribution of State revenues under a State-local partnership of support. This study is directed toward developing such measures for the counties in Tennessee.

Consensus on methods for measuring the relative fiscal capacity and effort of local school districts has eluded educators, politicians and economists alike. Reasons for disagreement are multiple. Among the most pervasive are the difficulties associated with attempting to isolate capacity and effort to support education from that to support the entire spectrum of public need.

This review of related literature provides a background of information and knowledge tracing the development of rationale utilized in fiscal capacity measures. From this review a basis is developed for measuring the fiscal capacity and effort of Tennessee counties to support education.

This chapter consists of two parts. Part one traces the development of fiscal capacity measures with special attention to basic rationales employed. Studies analyzing capacities of states and localities are examined with respect to methodology. Part two is devoted to a brief analysis of the development of capacity measures employed by the State of Tennessee spanning the period from 1909 to 1977.

Measures of Fiscal Capacity

Two basic approaches have been developed by researchers in attempting to measure fiscal capacity and effort. One approach utilizes economic indicators, notably some refinement of income or wealth, out of which all taxes are paid. The second approach subjects available tax bases to various levels of tax rates in an attempt to determine "potential" revenue levels from a uniform tax system. Conceptually these approaches represent a choice between an absolute "capacity" measure and an "ability to pay" approach.

Capacity measures based on revenue "potential" do not rely on single revenue bases. Instead, composite measures of potential yields from income, property, and consumption are calculated for analysis. This approach seems to capture the true meaning of fiscal.

Webster traced the origin of the word fiscal to a Latin term for public chest, and defined it as "relating to the public treasury or revenues" (Webster's New, 1971, p. 210). Incorporating this concept of fiscal, an Advisory Commission on Intergovernmental Relations (ACIR) study in 1971 defined fiscal capacity as being concerned with the ability of governments to obtain resources for public purposes. The emphasis was not on individual tax burdens. Measures of fiscal effort were determined as a gauge of how much of their capacity governments were actually using.

Relative to the use of economic indicators to measure fiscal capacity, discussions have centered around the alternative acceptance of the economic concepts of stock and flow. Alkin (1965) asked the question,

> Should a measure which represents the yearly flow of funds such as "income" be used as the measure of financial ability or, alternately, should the choice be a measure which is representative of the total stock of accrued fiscal capacity such as "wealth" or property valuation? (p. 10)

Measures involving only single revenue bases have emphasized a concern for individual taxpayer burden (ability to pay) whereas measures involving multiple revenue bases have been concerned with actual dollar capacities to jurisdictions (potential revenue). The ACIR (1971) succinctly summarized this point by stating:

> It is especially important to observe that fiscal capacity involves the financing capabilities of governments rather than the economic well-being of people. The two are interrelated, because governments depend mainly for their financing upon taxes and other revenue sources that tap the income, transactions, or property holdings of people. (p. 4)

The basic problem in determining fiscal capacity, then, rests in the necessity of choosing between a measure of revenue potential, a measure of ability to pay, or a measure giving equitable weight to each. Hickrod and Sabulao (1969) commented:

> If the two principal measurements of "ability" or "wealth", that is income and property valuations, were closely correlated then the debate over which is a "better" measurement of ability to support education would have little importance.. The following state-wide correlations between the two variables have been observed: .57 (Wisconsin), .40 (New York), .38 (Oregon), .34 (California), .30 (Massachusetts), .26 (New Jersey), .09 (New Mexico), .01 (Washington), and one negative correlation, -.18 (Nebraska)... Present thinking in the field does seem to be more favorable toward a mixture of property valuations and income, or property valuations, income and the sales tax base, rather than simple property valuations alone. There is no agreement on the proportions in this mixture. (p. 39)

Property Wealth as a Measure of Capacity

Historically, the most prevalent indicator of fiscal capacity to support education has been the assessed valuation of property per pupil. Alford (1963) stated that, "By 1942, the general property tax amounted to only 3.8 percent of all state revenues, as compared with 25.6 percent in

1922 and 42.7 percent in 1902" (p. 2). This trend allowed the local governments to increase their utilization of the property tax in a dramatic fashion. Johns (1969) pointed out that by 1966 local governments were collecting 87.1 percent of all property taxes levied with a national average indicating schools to be receiving 98 percent of their local revenue from this source.

Due (1970) determined that nationwide, local governments received about $44 billion or 84 percent of their tax revenue from the property tax during fiscal year 1969 despite expansion of local nonproperty taxes. School districts received 99 percent of their local tax revenue from the property tax during the same period.

The high level of support for education from property has prompted many researchers in school finance to determine assessed valuations per pupil for inter district wealth comparisons with no further discussion or refinement of the measure. However, comparable property valuations are not easily obtained on an interstate basis without using sales ratio techniques. Alkin (1965) observed that, "... a pattern has been reasonably well established of using property valuation as a measure of fiscal capacity in inter district comparisons and of using income as a measure in the examination of fiscal capacities between states" (p. 11).

Hickrod (1975) has advised the use of caution in blind reliance on property valuations by stating, "...while 'property valuations' have been accepted for half a century as the measure of local fiscal capacity, there is now, and there has been for sometime, reservation concerning the validity of this specification of fiscal capacity" (p. 45).

Hickrod's concern was based upon observed assessment practices in the

State of Illinois. Underassessment has been traditionally rewarded with more funds from the state, or less local requirement, or both. Validity of measures based on property valuation in any state remains in the hands of a determined and persistent effort at the state level for equalized assessments.

During the decade of the forties, Johns pioneered the implementation of "Indices of Taxpaying Ability." By 1955, some states, either because assessed valuation had not been equalized or because a satisfactory plan for determining assessment ratios had not been established, adopted this method of ability determination (Johns & Morphet, 1960).

The Index of Taxpaying Ability was not designed nor intended to be a measure of total fiscal capacity. Instead, the approach was designed to measure the relative ability of local school systems to pay property taxes. This Index functioned as a surrogate measure of relative equalized assessed property wealth.

The procedure employed was to regress economic factors (e.g., sales tax receipts, automobile license tax paid, value of farm products sold, and number of gainfully employed workers) on the true value of property in those counties where reliable property data were available (Johns & Morphet, 1960). Weightings assigned to each economic factor were then used to calculate ability indices based on relative true property wealth in all counties of a state.

The basic rationale was that property remained the best indicator of local ability to finance education and should be used as such even if relative property wealth had to be estimated statistically. An additional

rationale for using property wealth as a measure of capacity rests in the relationship between property valuations and expenditures for education.

Weiss (1970) evaluated 1,384 communities in the States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont using property valuation as the measure of financial ability. Simple correlations between financial ability and current expenditure per resident pupil were significant for every state studied. Brazer (1962), Hirsch (1960), Sacks (1963), Kee (1965), and Garms (1967) all have conducted significant research in correlating per pupil expenditure to wealth of districts and all have found property valuations to have high correlations.

At Stanford, James, Thomas, and Dyck (1963) utilized a model with data from 589 school districts in 10 states to analyze variations in per pupil current operating expenditures. Property valuations surfaced as a significant element in explaining 77 percent of expenditure per pupil variation.

A 1969 study by Hickrod and Sabulao of five metropolitan areas (Boston, Chicago, Cleveland, Detroit, and St. Louis) identified assessed property valuation per pupil as the leading predictor of school expenditures in three of the areas and second best in the remaining two.

Research cited indicates that districts tend to spend in relation to their ability for education. Since property wealth is the largest single base available for local taxation, a natural relationship should and does exist between this revenue source and local expenditure for education. The rationale employed in developing fiscal capacity measures based upon consideration for potential revenue for education has led researchers to adopt property wealth per pupil data.

Recently, criticism of using property alone as a measure of local wealth has emerged. In an attempt to unite the considerations for potential revenue and individual taxpayer burden several researchers have suggested combined measures of property and income (Hou & Carson, 1977). Odden (1977) maintained that property was no longer an accurate measure of wealth for either school districts or individuals.

This expressed concern is not novel, however, pioneer research in the field of fiscal capacity determination focused on a combination of income and property wealth. Strayer and Haig (1923) formulated an index for the counties of New York based on the average of taxable income per county plus one-tenth of the full value of the county's real estate. Norton (1926) used a three-year average state income plus one-tenth of all tangible property to develop indices of capacity on an interstate basis. Over 40 years later James and Cronin (1969) commented explicitly on this point:

> Neither measures of property value nor measures of income constitute the sole valid estimate of community taxpaying ability in all communities. Present reliance on one or the other of the two lead to unintentional inequities in both taxation and distribution schemes. Future researchers doubtless will continue to identify the differences of the two measures, and the possibility of developing an equitable mixture of the two or of finding other valid measures of wealth. (p. 4)

Benson and Kelly (1967) shared a similar philosophy after conducting a 1966 school facilities study in Rhode Island. They believed income and property both to be viable measures of ability. Certain areas of Rhode Island were found to be high in property values and low in income, and vice versa. Industrial cities were frequently low in income but high in property values. They commented:

> Because the two measures represent different dimensions of taxpaying ability, the state should take each into account in determining local wealth for state aid purposes. (p. 34)

As a result of the work of Benson and Kelly, Rhode Island adopted a combination of income and assessed valuation into their 1968 state aid formula. Equalized assessed valuation was adjusted by the ratio of the school district median family income to the state median family income (Hou & Carson, 1977). Rhode Island did not represent an isolated case. Kansas, Maryland, Connecticut, Virginia, and Pennsylvania have employed combinations of income and property as determinants of local fiscal capacity.

One question remains, how can income and property measures be equitable combined for ability determination? This question is especially germane in states not utilizing a personal income tax. Property ownership in a high income area would immediately assume a greater liability if state allocations and/or local requirements were based on income-property combinations of capacity measures.

In summary, the use of property valuations per pupil persists as the most common measure of the local ability to finance education for two apparent reasons. Property tax revenue provides in excess of 98 percent of the local support for school systems across the nation, and per pupil measures relate this wealth directly to need in a manner useful for state allocation plans.

Measures Based Upon Income Alone

Much discussion has been generated relative to the use of some form of income measure of fiscal capacity, Odden (1977) discussed the use

of income in three contexts:

1. For jurisdictions that can levy income taxes, income is clearly an additional measure of fiscal capacity.
2. Regardless of the particular tax that is used, income is the best single indicator of fiscal capacity, and
3. Income, as an indicator of ability to pay links taxes raised to the burden placed on the community and its resources.

Availability of comparable data remains a logistic consideration for using personal income as a measure of capacity because personal income data represent the most comprehensive economic data now available annually on a state-by-state basis (ACIR, 1962). However, income data for jurisdictions smaller than state-wide are not as easily obtained and often must be prorated. This is especially true when analyzing data for school districts not coterminous with political subdivisions.

Even when used for interstate comparisons, gross personal income data have not met certain criteria of past research. Rationale for refinements has focused on the concept that gross personal income does not accurately reflect the per capita amount available for local taxation (Johns & Morphet, 1960).

According to Rossmiller (1972) federal income tax paid and a minimum living allowance are not available for local taxation and should be deducted from gross income to yield a more viable measure of relative local ability. As a consequence, several net personal income measures have been developed for school finance study.

Johns (1971) deducted $750 per capita for basic necessities and federal personal income tax paid from gross personal income to derive a measure

of net personal income per capita. Using the same approach, the Educational Policy Commission of the National Education Association (1959) increased the base deduction to $800 per capita. A 1977 school finance study conducted in West Virginia defined net personal income in the same manner as Johns.

Effective buying income (EBI) represents another gross income refinement that has received attention in the study of school finance as a measure of fiscal capacity. EBI per capita or per household represents the disposable personal income individuals or households have available to spend after subtracting all direct taxes - federal, state and local (Our Children's", 1977).

Each of these refinements represented reductions in income for federal tax paid. Federal tax data for these reductions were not always easy to obtain, however, and their necessity is questionable. The ACIR (1962) pointed out that refinements of this type may not be warranted:

> A fairly extensive study of federal tax withdrawals from personal income made in 1954 details the conceptual and measurement problems involved in adjusting for these withdrawals. This study, as well as the work done by the Office of Business Economics on developing estimates of personal taxes by states, points to the conclusion that the relative position of the states is affected very little by an adjustment for federal tax withdrawals. (p. 15)

Alexander ("Our Children's", 1977) used gross personal income per capita, net personal income per capita, and effective buying income per capita in a 1977 school finance study of West Virginia. When compared with five adjacent states and the United States, West Virginia's rank changed one position regardless of the income measure used.

Some have proposed that income measures more directly related to the demand for education should be used to assess the capacity of states and units of local government to finance education. Johns and Morphet (1960) stated:

> Obviously, the per capita income would not be a good measure of ability of the various states to support schools, even though it might constitute a measure of ability to support certain other governmental services. (p. 149)

Personal income per person age 5-17, personal income per child in average daily attendance, and personal income per child in average daily membership have been recommended ("Variations," 1971). These measures do reflect educational "burdens" more accurately than per capita measures and are sensitive to inter district pupil density variations.

Johns and Hamilton (1970) found that Tennessee ranked 44th among the states on the basis of gross personal income per capita, net personal income per capita, and net personal income per capita as a percentage of personal income per capita. However, when income measures were changed to reflect educational "burden" Tennessee ranked 38th on personal income per school age child, 38th on personal income per child in ADA, and 41st on net income per child in ADA.

Hou (1975) found that among the 438 Illinois unit (K-12) districts, the City of Chicago ranked 4th in per ADA income, 47th in per capita income, and 92nd in median family income. Consideration given to introducing income weightings into a state aid formula should include results from investigation of the possible different effects of different income weightings.

Regardless of the particular income refinement selected, a basic

question persists relative to the adoptation of income as an element in capacity determination in states not levying a personal income tax. Should a base not available for local taxation be included in a measure of ability? This question must be answered before a rational selection of a methodology for capacity determination can be made. Pioneer research in school finance justified the inclusion of income ability in measures determining the fiscal capacity of localities only because of it's availability for taxation at the local level. Commenting on the selection of tax bases for building a composite ability index for the State of New York, Mort (1926) stated:

> It (selection of tax bases) may be simplified first by eliminating theoretical ability to pay from consideration. We need only determine ability to pay under the tax system actually to be used. Since we must deal with communities which have no power over their tax systems except through state action, we cannot consider their ability as it would be under an ideal tax system. To build our system of state aid on such a foundation would throw excessive burdens upon the actual taxpayers in some communities, simply because there happened to be wealth in those communities that was not taxable under the existing system of taxation. (p. 16)

Odden (1977) expressed the desirability of including measures of income regardless of its availability as a source of revenue and stated, "Even when the property tax is still the only local tax, income may still be a more comprehensive and sensitive measure of fiscal capacity. Studies have shown that income is the single best explanatory variable of governmental expenditures" (p. 364). However, Odden did not claim income to be the best single explanatory variable of governmental expenditures for education. Research has shown little relationship between measures of income and per pupil expenditures.

Johns (1977) commented:

> Including income in the measure of a district's contribution to the cost of its state assured program could easily result in requiring a district to levy property taxes in excess of its legal limits, if it does not have the capability of levying local income taxes. (pp. 98-99)

Numerous studies have been conducted in an attempt to isolate socioeconomic variables related to effort for education. Kay, in a 1973 study of local tax effort in Kentucky, used multiple regression analysis to determine the relationship of 24 selected socioeconomic variables to local tax effort. When individual variables were correlated with tax effort, the most significant variable related to effort was the property tax base.

Sparkman (1977) studied the relationship between socioeconomic variables and state effort for education in all 50 states. Twenty-eight socioeconomic variables were analyzed with respect to their influence on each state's educational effort. Using two different measures of effort, the study could explain 38 and 32 percent of the variation in effort among the states. The factor associated with income measures in the analysis explained only 1 percent and 7 percent, respectively, of the variation in state effort for education. Rationalization for using income based on the relationship between income and effort cannot be justified on the basis of the literature reviewed.

In summary, justification for the use of income remains with its relationship to the ability to pay principle. Interstate capacity measures will likely continue to utilize some form of income data until such time as comparable interstate data for other wealth measures become available. The use of income in states not taxing this source for education is questionable in the determination of local capacity for education support.

Tennessee does not levy a general personal income tax. The local retail sales and the property tax bases produced over 97 percent of the county revenue support for the financing of public schools during the 1977 fiscal year. Research cited did not justify inclusion of measures of county personal income ability for the computation of measures of county fiscal capacity where this base was not available for local taxation. Generally, income measures have been included in capacity measures where

1. Income represented the only reliable data base for comparisons, and/or
2. Income taxation was available locally for support of programs of education.

Neither case applies to the State of Tennessee. A valid case has been built by past research for using

1. Bases for which valid measures are available, and
2. Bases which are available for local taxation.

These criteria indicate the selection of a combination of measures of local option sales tax and property ability to be a valid choice for the State of Tennessee.

Uniform Tax Systems

The second major approach to the problem of measuring fiscal capacity evaluates tax bases available to a taxing jurisdiction, determines "appropriate" rates, and estimates the amount of revenue these bases would produce if subjected to the selected rates. A Model Tax System, Representative Tax System, and Average Financing Tax System are some of the more widely discussed methods of this type for determining the fiscal capacity

and effort of state and local areas. Although these methods share a common approach, each differs in the rationale utilized for base and rate selection and/or determination.

The idea of a Model Tax Plan was developed by the National Tax Association in 1919. The plan selected bases and rates thought to produce taxpayer equity and adequacy of yield. Acceptance of Model Tax Plans for capacity determination dictated the assumption that an ideal procedure for raising taxes could be derived, an assumption not substantiated in the field of economics (Alkin, 1965). However, by 1935, Newcomer, in her work at Columbia, developed an index of taxpaying ability of state and local governments using a Model Tax Plan approach. While Newcomer assumed a uniform tax in all states, Chism (1936) modified the Model Tax Plan and applied it directly to each state in an effort to determine potential revenue available to finance public schools.

Implementation of tax-based models assumed state wealth or income to be available for support of education only insofar as it might be taxed through a "practical" system of taxation. Definitions of "practical" have been left to the discretion of researchers and/or policymakers. In 1962, the ACIR explored the possibility of using the Model Tax Plan approach in a nationwide study and concluded:

> Views on the content of a model or ideal state-local tax system vary widely. No attempt has been made in recent years to crystalize them into a consensus...Indeed, the concept of a model tax system has implications for public policy (but not necessarily for fiscal capacity measurement) purposes which may be at variance with the Commission's underlying philosophy that local conditions, preferences, and objectives are so varied among the 50 states as to preclude a single tax model appropriate for all the states. (p. 31)

Rather than inject policy decisions into the selection of an "ideal" tax system, the Commission selected a model based on prevailing tax practice across the country - or "Representative Tax System." The "Representative Tax System" was an average of the tax structures which actually existed in the States. ACIR members indicated that such a system reflected the politically accepted here and now. As such, comparisons of fiscal capacity measures were meaningful in terms of the kinds of taxes and tax rates politically available to the States.

A 1971 ACIR study of local fiscal capacity and effort refined the earlier "Representative Tax System" approach with the introduction of an "Average Financing System." Revenue capacity of a particular area was defined as, "the total amount of revenue that would result by applying to bases within the area, the national average rate of each of the numerous kinds of state-local revenue sources" (p. 6). Thus revenue potential was expanded beyond bases politically available within each state. Revenue potential of a state not taxing personal income included revenue from this source. These measures did not necessarily reflect the political here and now in each state as did the 1962 ACIR study. This procedure, in effect, weighted each revenue source according to its nationwide importance.

A third example of the Model Tax System approach has been calculated by Quindry (1978) in a series of reports on potential revenue prepared annually for the Southern Regional Board. Quindry applied national average tax rates to each of 15 bases. Not all of the tax bases used in the reports were utilized by each state. Neither Quindry's nor the "Average Financing System" approach reflected actual practice in each state. A

significant procedural difference in the Quindry methodology was the utilization of personal income as a proxy base for computing potential revenue from other tax bases including general sales. Personal income data were available annually on an interstate basis and its use represented a viable estimation of the relative potential of other often nonunilaterally taxed bases. Quindry further refined his total revenue potential by including projected motor vehicle and motor fuel tax collections based on the number of motor vehicle registrations within a jurisdiction.

Due (1970), in a detailed discussion of alternative tax sources and/or utilization, developed tables demonstrating increased revenue potentials of the states. His technique made no recommendations relative to desirable tax mixes or rates. Rather his work afforded individual states the opportunity to examine their revenue potential in relation to the rest of the nation.

Significant differences to date in uniform tax system approaches have involved the inclusion or exclusion of bases not taxed in all jurisdictions and the method of rate determination.

Development of uniform tax system approaches for capacity measurement allows the researcher flexibility in base and rate determination. Theoretically a uniform tax system can be designed to measure local ability to support education. Among the decisions necessary in designing any uniform tax system are the following:

1. Should bases be selected that are
    a. legislatively available but not presently utilized?
    b. legislatively available and utilized?

c. not legislatively available for taxation?

2. Should rates be determined by

a. dividing aggregate revenue by aggregate bases in area under study?

b. average rates in all areas under study?

c. a or b but using aggregates from areas larger than study area (e.g., nationwide rates for state or local studies)?

d. selecting some "practical" rate?

e. utilizing a "maximum" rate?

Given the choices outlined, it is apparent that the validity of the final capacity measure rests equally in the hands of policy decision and economic realism.

Development of Tennessee Capacity Measures

Early Attempts at Equity and Adequacy

The 1909 Session of the Tennessee Legislature formally established a General Education Fund to provide more adequately for the general education of Tennessee's scholastic population (Tennessee Public Acts of 1909, Section 3, Chapter 264). Until this time appropriations from the General Fund of Tennessee were made on a year-to-year basis. The General Education Fund as established in 1909 constituted 25 percent of the general revenue of the State.

As a part of the General Education Act of 1909, 10 percent (approximately $15,000) of the General Education Fund was set aside as a "special fund" to be "...used and expended for the purpose of more nearly equalizing the common schools (grades 1-8) in the several counties of the State..."

This provision constituted a major step in Tennessee for equity and adequacy in education.

Participation in this special apportionment required a minimum local school tax of not less than 40 cents on each hundred dollars of taxable property, a tax of two dollars on each taxable poll, and local utilization of all legal privilege taxes for education. Allocation of the special fund to qualifying counties was made "...in proportion to their scholastic population and in inverse ratio to the taxable property of the several counties to scholastic population..." (Tennessee Public Acts of 1909, Section 3, Chapter 264).

"Equalizing", as used in the 1909 special fund provision, approached the present usage of the term by attempting to make available adequate funding to all common schools. Two basic elements of a modern funding mechanism were present in this historic Act: (1) required local effort and (2) allocations based on a measure of need and ability.

Capacity and effort were conceptualized in terms of property wealth per pupil in this initial attempt to fiscally equalize educational opportunities in the State of Tennessee. No formal recognition was given to the individual ability-to-pay principle.

Subsequent amendments (Tennessee Public Acts of 1913, Chapter 23; Tennessee Public Acts of 1915, Chapter 35) changed the amounts to be apportioned and/or local requirements. Basic reliance on property tax effort did not change. The policy of basing State allocations for educational purposes on property tax effort was established and has remained in some form through the present.

Steps taken by the 1917 Session of the Tennessee Legislature (Tennessee Public Acts of 1917, Section 2, Chapter 130) to set aside a portion of the General Education Fund as a "Special Equalizing Fund" had the purpose of aiding and encouraging the lengthening of the short school terms in the counties until all the elementary school terms of the State contained a minimum of 140 days.

Local effort was encouraged by the requirements for participation in the equalizing apportionment. Amounts received by the county from the State were dependent on two dimensions: (1) the length of school term in the county and (2) the county school tax vote on each $100.00 of taxable property.

Required effort was based on one revenue source-property.

First Comprehensive Equalization Plan

During the 1925 Legislative Session, Tennessee added another dimension based on local effort to the general plan for State financing of education. Flat grant per capita allocations based on local property tax effort became the basis for allocating 73 percent of the General State School Fund to the counties. Each county's portion of this allocation was determined as follows:

> Five dollars ($5.00) per capita, based upon the average daily attendance in the county and city public elementary schools of the state shall be distributed annually to each county that levies less than 30¢ for elementary schools; six dollars ($6.00) for each county that levies for elementary schools not less than 30¢ and under 40¢; and seven dollars ($7.00) for each county that levies for elementary schools 40¢ or more. . . (Tennessee Public Acts of 1925, Section 17, Chapter 115)

The remainder of the General State School Fund was utilized as an equalizing fund to enable the various counties of the State to provide a minimum

school term of eight months in the rural elementary schools. Equalization funds were available to counties only after the following provisions were met and found to provide inadequate funding for the operation of eight-month elementary programs. Each county was required to levy and collect:

> (1) A tax of elementary schools of not less than fifty cents on each one hundred dollars of taxable property in the county, including any tax for elementary schools levied by the Legislature and retained in the county and excluding the State tax of eight cents for schools as provided in this Act, (2) a poll tax of one dollar ($1.00), (3) all privilege taxes and fines allowed by law and that (4) complies with all other provisions of this Act...(Tennessee Public Acts of 1925, Section 17, Chapter 115)

Revenues thus determined were added to the allocated seven dollars ($7.00) per capita. This sum was then subtracted from the amount required to operate a State defined minimum program to determine the equalization amount available to any county experiencing additional need.

The rationale for both the variable flat grant allocation and the equalization provision was based upon a required property tax effort. Effort as defined by this Act required a reasonable exercise of local ability. Ability was measured by property wealth.

Substantive change did not occur in the method of determining local ability and/or effort until following the 1945-47 survey of public education in Tennessee. As the effect of the 1925 plan had become better understood, property assessment had either been lowered or had not kept pace with true value ("Public Education," 1957).

In an effort to amend the inequities of improper and/or inadequate local assessment practices, the 1947 legislature felt compelled to move toward a more equitable method for determining local property valuations.

The method for determining property valuations for each county as specified in the General Education Act of 1947 follows:

1. The locally assessed valuation of taxable property in each county in 1946 was adjusted to reflect equivalent valuations represented by payments-in-lieu of taxes made by the T.V.A. and other federal agencies.

2. The total true value of property in each county in 1946 was estimated by the State Board of Education.

3. An average of the two above quantities was computed for each county, and this average constituted the base for determining the local contribution. (Tennessee Public Acts of 1947, Section 8, Chapter 8)

This method determined property valuations by averaging inequitable local assessments with estimated property values made by the State Board of Education. Additionally, a guarantee provision was enacted to insure that no county would be required to contribute more than it raised for public school purposes in the 1945-46 school year.

Property was retained as the ability indicator for capacity determination although problems with obtaining valid local assessments on a statewide basis were obvious. The methodology employed by the 1947 Legislature constituted a first step in the solution of this problem.

Implementation of the Index of Taxpaying Ability

Property remained the single base for measuring local ability until the 1955 Session of the State Legislature adopted an "index of taxpaying ability" (Tennessee Public Acts of 1955, Section 5, Chapter 136). Criticism had steadily mounted relative to certain inequities inherent in the 1947 index of ability. In a report to the Education Survey Subcommittee of the Tennessee Legislative Council ("Public Education," 1957), the

following comments were made:

> In addition to the inequities inherent in the guarantee provisions there was no basis for adjusting the 1947 index to reflect population changes, construction or new residences and manufacturing plants, and other factors affecting the relative taxpaying ability of the counties. (p. 440)

Gibbs ("Public Education," 1957), in his work to provide a more equitable method for obtaining valid property data, employed a procedure utilizing multiple regression techniques to predict relative property values for the 95 counties in Tennessee. This procedure, pioneered by Johns, had been implemented in Georgia, Alabama, and Mississippi prior to 1955 (Johns & Morphet, 1960).

Simply stated, the procedure regressed certain economic factors on property values obtained from sales ratio studies conducted by the railroads operating in Tennessee. The multiple regression technique produced the following equation:

Index of Taxpaying Ability =

.105 (county percent of the state total motor vehicle registration payments for the three most recent years) +

.069 (county percent of the state total farm products sold) +

.139 (county percent of the total number of gainfully employed non-governmental workers in the state) +

.690 (county percent of the state total retail sales tax collections for the three most recent years)

(Tennessee Public Acts of 1955, Section 5, Chapter 136)

Misunderstanding as to what was being measured and how it was measured often surrounded the procedure. Criticism focused on its heavy reliance on

sales tax collections. The basic contention was that often a purchaser paid his sales tax in one county "...while his taxable real estate was located in another county and, as a result, property taxpaying ability in cities and towns was unduly exaggerated" ("Public Education," 1956, p. 442). The validity of this criticism was dispelled by a comparison between the index of taxpaying ability and an equalized property valuation index for 20 counties. Comparison indicated the index of taxpaying ability to be an accurate estimate of the taxpaying ability of the large metropolitan counties ("Public Education," 1957).

The economic index of taxpaying ability was not intended to supplant reliance on property wealth in the State Minimum Foundation Plan. Instead, the "index" furnished a surrogate measure of each county's percent of the total estimated true value of taxable property in the State.

A 1957 survey of public education in Tennessee indicated that if and when "...a satisfactory plan was developed for equalizing property valuations among counties, the actual equalized assessed valuation of taxable property in each county could be used to determine the local contribution of the state minimum school program" ("Public Education," 1957, p. 442).

Tennessee Educational Finance Act of 1977

In an attempt to implement a funding mechanism that better met the individual needs of students across the State, the 1977 Session of the Tennessee Legislature passed into law the Tennessee Educational Finance Act of 1977. As a part of this Act, a new method for measuring the fiscal capacity of the 95 counties was implemented. Thus, after a period of 22 years, the "index of taxpaying ability" was replaced by a new procedure for deter-

mining the local ability to finance programs of education (Tennessee Public Acts of 1977, Section 6, Chapter 289).

Adoption of this procedure was initiated by aggrieved taxpayer complaints brought in the Federal Court by the L & N Railroad Company and in the State Court by the Southern Railway System ("Legislation Relating," 1967).

The L & N and Southern Railways had sought relief through the State and Federal Court Systems claiming unfair discrimination relative to the different assessment ratios employed with respect to public utilities and residential properties. The courts in granting relief commented with respect both to the constitutionality aspects involved and to the facts uncovered by sales ratio studies conducted to facilitate proceedings ("Legislation Relating," 1967).

The State, in an attempt to remedy the inequities precipitated by the condition of property assessments, appointed a tax study commission to conduct a study of all phases of the problem and recommend remedial action ("Legislation Relating," 1967). As a result of the work of the study commission, four bills relating to the tax problem were enacted by the Legislature. Chapter 326, Tennessee Public Acts of 1961, established a procedure whereby a state-wide reappraisal and tax revaluation program was undertaken.

Originally, the total State reappraisal of property was to have been completed by 1973. As of the fall of 1977, all counties in Tennessee except Monroe, Carter, and Johnson had completed the state-wide reappraisal program begun in 1967 ("Annual Survey," 1977).

As an outgrowth of State interest in tax equity the 1972 Session of the State Legislature (Tennessee Public Acts of 1972, Chapter 746) created a Tax Modernization and Reform Commission. One major area of study included alternative methods of financing public school systems.

As a part of the final recommendations made by the Tax Modernization and Reform Commission, a section was devoted to State-local funding of education ("Sharing of State," 1974). Local ability was once again placed in the hands of equalized assessments of property. Recommendation was made that each county would be required to provide annually as its local share of the minimum foundation program an amount equal to the value of a tax rate to be determined by dividing the State aggregate amount of required local contribution by 95 percent of State aggregate property assessment ("Sharing of State," 1974) applied to 95 percent of the total assessed valuation of the county.

While final action on the local share measure retained the basic reliance on equalized property assessments, the methodology for determining each county's "adjusted property value" was changed to read as follows:

(1) Obtain the most recent payments in lieu of taxes paid by the Tennessee Valley Authority directly to individual counties and to the state for distribution to individual counties as are available on March 1. The total amount of such payments received by each county shall be converted to an equivalent amount of assessed property value by using the current individual county tax rate available on March 1. Where multiple county tax rates exist, the highest rate shall be used.

(2) Obtain the total assessed valuation for the county from the most recent Tax Aggregate Report of Tennessee by the State Board of Equalization as is available on March 1 each year.

(3) The adjusted county property value shall be the sum of the total assessed valuation of the county and the county property equivalent of TVA payments in lieu of taxes as calculated in subsection one (1) above. (Tennessee Public Acts of 1977, Section 6, Chapter 289)

Each county's local share in the basic minimum program as well as local fiscal responsibility in capital outlay was based on this property measure.

Summary

The first section of this chapter provided a survey of developments of the various approaches to measures of fiscal capacity. Section two was devoted to a summary tracing measures of fiscal capacity in Tennessee. Rationale employed by Tennessee did not appear incongruent with general developments of rationale employed in previous research.

One fundamental choice made by previous researchers focused on the use of only those tax bases available for taxation. The 1962 ACIR study indicated that this decision allowed the capacity measures to represent the political here and now.

The selection of property wealth for capacity determination in Tennessee represented a natural choice since historically property has represented the bulk of local support for education in the State. This choice held counties accountable for a degree of effort from the base available to them. Tennesseans have viewed this requirement as an equitable one since 1909. Even during the period (1955-1977) when Tennessee turned to the "economic index" approach, property wealth remained the standard of comparison for relative county ability to support education.

One variable, however, has gained fiscal significance in the local funding of education without gaining formal recognition in the State Education Finance Act of 1977 or any previous act. The local option sales tax has, since its adoption in 1963, assumed a position second only to property in supplying local funds for programs of education. As of fiscal year 1977, local sales tax yields supplied $112,721,281 or 33 percent of the $341,094,680 total county revenue receipts for the current operation and maintenance of programs of education ("Annual Statistical," 1977).

Tennessee has demonstrated a history of determining local capacity based on taxes available to support educational programs. Inclusion of measures of tax bases not available for local taxation contradicts the principle established by this rationale. Revenue from a general personal income tax is not now available in Tennessee. Early State programs cited (1909, 1917, and 1925) included yields from the poll tax and other privilege taxes available locally even though these sources represented only a fraction of the property yields. The exclusion of local sales tax ability which supplied 33 percent of the local revenue for education in fiscal year 1977 is a violation of this basic rationale employed since 1909.

How may property and sales tax ability be equitably combined for local capacity determination in Tennessee? One major purpose of this study is to present a methodology for doing this and to show it is not in violation of the basic rationale historically used in Tennessee. The method developed and employed is also in keeping with the best rationale utilized in previous capacity studies.

CHAPTER II

MEASURES OF COUNTY FISCAL CAPACITY FOR SUPPORT OF EDUCATION

Chapter I of this study provides a review of literature tracing the development of measures of fiscal capacity with a specific emphasis on the rationale employed. A section also traces the history of fiscal capacity measures and required local effort for the support of programs of education in the State of Tennessee from 1909 to the present. The purpose of this chapter is to develop and present alternative measures of county fiscal capacity which hopefully may serve two primary purposes.

Firstly, taxpayer equity cannot exist when the fiscal burdens for providing quality programs of education rest disproportionately on some citizens of a state simply because of where they reside. Equalization of taxpayer burdens for education among districts within a state can generally be increased by more objectively assessing local fiscal capacity and by increasing local requirements to support the state guaranteed program based on these assessments.

Secondly, student equity does not exist when the quality of programs of education varies among the districts within a state. Substantial equality of educational opportunity can generally be provided only in those states dedicated to the provision of a high level of guaranteed foundation program funding. Revenue for this level of funding must be obtained through a meaningful state-local fiscal partnership. A high level of unequalized local leeway results in wide fiscal disparities among districts.

An equitable state-local partnership in funding the foundation program can only be effectuated by employing an objective and comprehensive measure of relative local fiscal or taxpaying capacity. Each districts' required contribution to the state program must be based on this measure.

Tennessee presently determines each county's required local contribution to the foundation program (as well as local financial responsibility for capital outlay programs) from a measure of each county's percentage of the State assessed value of taxable property adjusted by the property equivalent of TVA payments in lieu of taxes. The rationale for employment of this methodology rests on the assumption that property tax levies supply the bulk of local support for programs of education and logically should represent each county's fiscal capacity for this purpose. This rationale is valid to a point. The problem arises when one examines the present county tax structure and resulting sources of local support for education.

The State of Tennessee allows the local taxing of retail sales at a rate not to exceed one-half of the State rate. One-half of the local levy must be spent for schools. This arrangement allows an amount equivalent to one-fourth of the yield from the State's greatest revenue producer - the retail sales tax base - to function as unequalized local leeway for education. The fiscal advantage to systems of public education in counties with high retail sales tax ability is both obvious and unfair. This element of ability is not recognized in the State measure of local fiscal capacity. During the 1976-77 fiscal year, approximately $113 million of a total of the $341 million of county revenue receipts reported for the current operation and maintenance of programs of education came from the county retail sales tax base.

Any measure of fiscal capacity not including a base yielding over 33 percent of the county revenue for the current operation and maintenance of programs of education ignores the definition, the basic intent, and the purpose of fiscal capacity measures. In Tennessee, property taxes and local retail sales taxes together accounted for approximately 98 percent of the county revenue receipts used for the current operation and maintenance of programs of education during the 1976-77 fiscal year.

A second source of inequity associated with the present measure of fiscal capacity has been demonstrated in the 1978 Real Estate Appraisal/ Sales Ratio Report published by the Comptroller of the Treasury, Division of Property Assessments. This comprehensive study which was conducted during the 1976 calendar year revealed mean county sales ratios of assessed valuations to actual sales prices ranging from a low of 29 percent in Hancock County to a high of 90 percent in Sullivan County. The Statewide mean ratio was found to be 60 percent. Present measures of fiscal capacity based on property assessed valuations adjusted only by property equivalents of TVA payments in lieu of taxes cannot express valid county percentages of State property valuations unless assessments are uniform.

Three alternative measures of fiscal capacity are presented in this chapter. The first alternative adjusts the presently used measure for the lack of uniformity of property assessments by adjusting on the basis of sales ratios. The second alternative presents a methodology for incorporating each county's local retail sales tax ability into the measure of fiscal capacity. The third alternative adjusts county property valuations to reflect sales ratio studies and incorporates local retail sales tax wealth into the measure of county ability.

Alternative 1 - Adjust Present Indices to Reflect Sales Ratio Analysis

Present indices based on adjusted property valuations have been accepted as measures of county fiscal capacity to support education for two primary reasons. Firstly, county property tax levies have provided the bulk of local revenue used to support programs of education and secondly, adjusted property valuations have been considered valid indicators of each county's relative ability to contribute its' "fair share" of revenue to any State required aggregate amount.

However, sales ratio analyses of county property valuations have cast serious doubt upon the validity of the present fiscal capacity indices. A 1978 Division of Property Assessments Report of 1976 comprehensive real estate appraisal/sales ratios has revealed wide disparity between reported valuations of county property and actual sale prices in Tennessee. Table 1 lists the median ratios of assessed value to actual sales price for residential, farm, commercial, and industrial properties for each county. An overall median ratio is also provided for comparison. Median county assessment ratios are generally regarded as the appropriate measure of central tendency to be used when comparing valuations and assessments of property. The measure is not distorted by extremely high or low valuations (Assessor's Newsletter, 1978). Median values for overall ratios ranged from a low of 23 in Hancock County to a high of 89 in Sullivan County. A Statewide overall median of 58 was reported.

Corrections for 1976 sales ratio overall median values listed in Column 1 and Table 1 increases the 1976 State total adjusted property valuations 59.2% from $11,519,276,703 to $18,342,225,166. Each county's corrected adjusted property valuation expressed as a percentage of the

TABLE 1

1976 Median County Ratios of Assessed Property Valuations to Actual Sales Prices of Properties

County	Overall Median	Residential	Farm	Commercial and Industrial
Sullivan	89	89	76	100
Bedford	87	88	69	81
Montgomery	82	83	46	92
Dyer	80	80	68	95
Lincoln	78	82	69	58
Roane	78	81	59	53
Humphreys	77	79	46	94
Blount	77	77	80	69
Bradley	76	77	68	75
Putnam	76	78	61	85
Sumner	74	75	55	81
Grainger	74	74	70	*
Hamilton	71	71	74	87
Rutherford	71	71	75	79
Cumberland	70	72	49	82
Wilson	70	71	67	76
Carter	69	71	44	86
Macon	69	74	55	70
Greene	68	70	57	63
Polk	68	69	43	*
Meigs	68	69	60	*
Johnson	67	67	58	*

TABLE 1 (continued)

County	Overall Median	Residential	Farm	Commercial and Industrial
Houston	66	67	49	*
Hardeman	66	61	39	54
Hardin	66	61	39	54
Davidson	65	66	*	77
Sevier	65	67	50	*
Washington	64	64	52	75
Madison	64	65	45	80
McNairy	64	68	60	*
Stewart	63	68	51	44
Gibson	63	63	60	80
Knox	63	64	60	70
Moore	63	63	63	80
Hamblen	62	62	60	56
Rhea	62	64	32	45
Crockett	62	64	52	66
Shelby	60	60	*	68
Haywood	60	60	49	95
Hickman	60	62	42	85
Obion	59	62	43	77
Maury	59	60	42	74
Pickett	59	63	37	*
Scott	58	59	24	51
Fentress	58	61	36	82

TABLE 1 (continued)

County	Overall Median	Residential	Farm	Commercial and Industrial
Claiborne	58	60	48	60
Williamson	58	59	35	50
Lake	57	60	55	51
Giles	56	61	45	60
Carroll	56	59	43	70
Trousdale	56	51	36	67
Sequatchie	56	57	42	55
Morgan	55	61	53	*
Smith	55	56	50	34
Marshall	55	60	34	65
Marion	55	43	26	*
Jackson	54	60	48	74
Henry	54	57	45	48
Lewis	54	59	30	*
Overton	54	59	32	85
Fayette	53	53	45	64
Cheatham	53	53	41	56
Coffee	53	57	31	81
Weakley	53	48	46	75
Franklin	52	53	40	81
Van Buren	52	53	27	*
Cocke	52	54	42	68
Lauderdale	51	54	41	61

TABLE 1 (continued)

County	Overall Median	Residential	Farm	Commercial and Industrial
Decatur	51	52	39	45
White	51	56	33	51
Dickson	51	52	34	63
Warren	51	53	34	52
Chester	50	54	39	82
Perry	50	52	23	37
DeKalb	50	55	29	43
McMinn	50	51	43	54
Clay	50	50	43	73
Campbell	49	50	27	*
Wayne	49	52	35	70
Jefferson	48	51	40	62
Henderson	48	49	37	57
Anderson	47	48	*	36
Unicoi	47	47	32	52
Bledsoe	46	58	26	76
Tipton	46	48	36	77
Lawrence	46	47	33	53
Loudon	45	45	32	82
Robertson	44	47	21	71
Union	42	43	43	*
Benton	41	42	33	61

TABLE 1 (continued)

County	Overall Median	Residential	Farm	Commercial and Industrial
Monroe	40	43	33	34
Grundy	37	38	34	12
Hawkins	34	35	29	61
Cannon	32	32	27	41
Hancock	23	25	21	*

Source: Compiled from data in Comptroller of the Treasury, Division of Property Assessments, State of Tennessee, Real Estate Appraisal Sales Ratio Report for the Calendar Year 1976, May, 1978.

State total corrected adjusted property valuation is listed in Column 2 of Table 2 for comparison with the present ability indices listed in Column 1.

Under the present Tennessee foundation program the counties with low assessment ratios in relation to other counties are rewarded unfairly by decreasing the local required contribution to the foundation program and increasing proportionately the State share. Likewise such counties are favored in the distribution of State Capital Outlay funds. Adoption of Alternative 1 would remove this source of inequity.

Alternative 2 - Combine Measures of Local Retail Sales Tax Ability and Adjusted Property Valuations into a Single Index of Ability

As indicated above Tennessee's present measure of county fiscal ability to support education is based upon a measure of property value adjusted by payments in lieu of property taxes by TVA expressed as a percent of the State total. The basic assumption that revenue from the local property tax provides the bulk of county support for education guided the selection of this methodology. Property wealth is considered to be the best indicator of county fiscal capacity where capacity is operationally defined as the ability to generate tax revenue. Presently in Tennessee, if County A contains 10 percent of the total State adjusted property valuation then County A is fiscally responsible for 10 percent of any aggregate local requirement under the foundation program.

If property wealth represented the only revenue base available for local support of education, then this approach to individual county fiscal capacity determination would remain basically sound and equitable. Tennessee counties, however, have the retail sales base available for local taxation. Since during fiscal year 1976-77, over 33 percent of the county

revenue for the current operation and maintenance of programs of education was derived from this base, a combined measure of county property and retail sales tax ability would provide a more complete measure of each county's potential for raising revenue for education.

Measuring county retail sales tax ability. If measures of property and retail sales ability are to be equitably combined into a single measure of ability then parallel methods of expressing ability for each of these bases must be developed. This can be done. Tennessee presently expresses each county's adjusted property valuation as a percent of the State aggregate total adjusted property valuation to determine each county's percent of the taxpaying ability to support education. County retail sales tax ability can be expressed in a similar manner by utilizing the following formula:

$$\text{County A's percent of retail sales base available for local taxation} = \frac{\text{State retail sales tax collections in County A}}{\text{Total State retail sales tax collections from counties}} \times 100. \quad (1)$$

State retail sales tax was collected at a rate of 4.5 percent in each county during the 1976-77 fiscal year. Local option sales tax was collected "piggy back" from the same retail sales base but at varying county rates Statewide according to local referendum. State sales tax collections therefore are utilized in this study to compute the percent of State retail sales base available for local option retail sales taxation in each county. Data developed by Formula 1 are statistically compatible for analysis with county adjusted property valuations as determined by the Tennessee Education Finance Act of 1977.

County retail sales tax ability data calculated by Formula 2 are presented in Column 3 of Table 2. Comparison of the data in Columns 1 and 2 of Table 2 reveals that 33 of the 95 counties had higher percentages of State retail sales tax ability than percentages of State adjusted property valuation.

Combined property and local retail sales tax ability. The methods whereby different tax bases have been combined for measuring relative fiscal capacity have been the subject of much controversy. Often different combinations of measures of wealth and ability are tried until some arrangement is found that is economically and/or politically "comfortable".

Any equitable combination of revenue bases should weight each in such manner as to reflect the relative support for a particular program derived from each. The method recommended by this study is based in part upon the approach utilized by the Bureau of Labor Statistics to compute the Consumer Price Index. Consumer Price Index calculations "weight" each market basket item according to its' percentage of the average consumer budget the item comprises. The development of a county weighted average ability index to support education as used in this study weights each tax base according to its relative fiscal importance in the provision of county revenue for the current operation and maintenance of programs of public education. Development of fiscal capacity measures encompassing both property and local retail sales tax ability necessitated the use of the following three formulae:

Combined ability index for County A =

$$\frac{A\left[\begin{array}{l}\text{County A percent of}\\ \text{State retail sales base}\end{array}\right] + B\left[\begin{array}{l}\text{County A percent of State}\\ \text{adjusted property valuation}\end{array}\right]}{A+B} \qquad (2)$$

Where A =

$$\frac{\text{Total State local option sales tax revenue for current operation and maintenance of programs of education}}{\text{Total county revenues for education}} \times 100 \qquad (3)$$

$$B = \frac{\text{Total State} \left\{ \begin{array}{l} \text{School property taxes current year} + \\ \text{School property taxes prior year} + \\ \text{Pick-up school property taxes} + \\ \text{Interest and penalty on delinquent school property taxes} + \\ \text{Payments in lieu of county school property taxes} \end{array} \right\}}{\text{State total county revenues for education}} \times 100 \qquad (4)$$

Formulae 2, 3, and 4 were used to compute measures of wealth based on a functional relationship between county property wealth, county local option retail sales tax ability, and the relative use of both by counties to support the current operation and maintenance of programs of public education. These measures are mathematically sensitive to any change in a county's relative property and local retail sales tax ability and in the Statewide relative reliance on these bases for local support of education.

County revenue from these two sources provided 97.6 percent of all county revenues for the current operation and maintenance of programs of education during the 1976-77 fiscal year. Using 1976-77 fiscal year data, Formula 2 used to calculate each county's combined wealth index becomes:

$$\frac{64.588 \left\{ \begin{array}{l} \text{County A percent of State retail sales base} \end{array} \right\} + 33.047 \left\{ \begin{array}{l} \text{County A percent of State adjusted property valuation} \end{array} \right\}}{97.635}$$

Combined wealth index data for each county are listed in Column 4 of Table 1. County values ranged from a high of 19.498 in Shelby County to a low of .047 in Hancock County. Davidson, Hamilton, Knox, and Shelby Counties contained percentages of 15.439, 7.672, 7.286, and 19.498, respectively, for a total of 49.895 percent of the total State combined property and local option retail sales tax ability. Thirty-two of the 95 counties have higher indices of combined ability than indices based on adjusted property valuations alone. These indices, as calculated are statistically compatible to the adjusted property valuations expressed as a percent of the State total which were incorporated into the Tennessee Educational Finance Act of 1977. As such they could easily be substituted for the present indices.

In effect, the indices of combined property and retail sales tax ability express each Tennessee county's fiscal capacity in terms of the county percentage of total State ability from these two bases. The two bases are each given the relative importance assigned to it locally as evidenced by derived annual county support for the current operation and maintenance of programs of education.

Alternative 3 - Combine Measures of Local Retail Sales Tax Ability and Adjusted Property Valuations Corrected for Sales Ratio Analysis

This alternative measure of county fiscal capacity combines the considerations for increased equity presented in Alternatives 1 and 2. Adjusted property valuations are corrected to reflect the 1976 sales ratio analysis conducted by the Division of Property Assessments. Each county's corrected property value is expressed as a percentage of the State total corrected property valuation before combining with local retail sales tax ability as outlined under Alternative 2.

TABLE 2

Measures of County Fiscal Capacity to Support Education in Tennessee
1976-77

County	Adjusted[a] Property Valuation as a Percent of State Total	Adjusted[a] Property Valuation as a Percent of State Total (corrected for sales ratio study)[b]	Retail Sales Tax Wealth as a Percent of State Total	Combined Index[c] (Columns 1 and 3)	Combined Index[c] (Columns 2 and 3)
Anderson	.878	1.170	1.571	1.113	1.306
Bedford	.716	.515	.574	.668	.535
Benton	.189	.289	.218	.199	.265
Bledsoe	.134	.182	.075	.114	.146
Blount	1.906	1.550	1.673	1.827	1.592
Bradley	1.484	1.223	1.430	1.466	1.293
Campbell	.406	.519	.586	.467	,542
Cannon	.108	.218	.119	.112	.184
Carroll	.383	.429	.428	.398	.429
Carter	.560	.510	.605	.575	.542
Cheatham	.295	.349	.212	.269	.303
Chester	.170	.213	.173	.171	.200
Claiborne	.280	.303	.288	.283	.298
Clay	.089	.111	.064	.081	.095

TABLE 2 (continued)

County	Adjusted[a] Property Valuation as a Percent of State Total	Adjusted[a] Property Valuation as a Percent of State Total (corrected for sales ratio study)[b]	Retail Sales Tax Wealth as a Percent of State Total	Combined Index[c] (Columns 1 and 3)	Combined Index[c] (Columns 2 and 3)
Cocke	.456	.549	.440	.451	.512
Coffee	.635	.750	.976	.750	.826
Crockett	.298	.301	.157	.250	.252
Cumberland	.655	.586	.447	.585	.539
Davidson	14.940	14.393	16.413	15.439	15.077
Decatur	.158	.196	.161	.159	.184
DeKalb	.190	.238	.193	.191	.223
Dickson	.438	.537	.501	.459	.525
Dyer	.859	.672	.746	.821	.697
Fayette	.519	.613	.215	.416	.478
Fentress	.204	.220	.160	.189	.200
Franklin	.462	.560	.459	.461	.526
Gibson	.931	.925	.856	.906	.902
Giles	.452	.506	.382	.428	.464
Grainger	.208	.176	.103	.172	.151
Greene	1.042	.960	.843	.975	.920
Grundy	.128	.218	.135	.130	.190
Hamblen	1.172	1.184	1.149	1.164	1.172
Hamilton	7.581	6.687	7.851	7.672	7.081

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TABLE 2 (continued)

County	Adjusted[a] Property Valuation as a Percent of State Total	Adjusted[a] Property Valuation as a Percent of State Total (corrected for sales ratio study)[b]	Retail Sales Tax Wealth as a Percent of State Total	Combined Index[c] (Columns 1 and 3)	Combined Index[c] (Columns 2 and 3)
Hancock	.051	.138	.040	.047	.105
Hardeman	.419	.397	.313	.383	.369
Hardin	.410	.539	.418	.413	.498
Hawkins	.595	1.115	.414	.534	.878
Haywood	.505	.527	.309	.439	.453
Henderson	.245	.320	.336	.276	.325
Henry	.545	.632	.560	.550	.608
Hickman	.330	.346	.182	.280	.290
Houston	.097	.092	.060	.084	.081
Humphreys	.614	.499	.334	.519	.443
Jackson	.132	.153	.076	.113	.127
Jefferson	.559	.730	.348	.488	.601
Johnson	.221	.207	.150	.197	.188
Knox	6.412	6.373	8.993	7.286	7.260
Lake	.156	.171	.111	.141	.151
Lauderdale	.376	.461	.337	.363	.419
Lawrence	.475	.648	.581	.511	.625
Lewis	.151	.175	.111	.137	.153
Lincoln	.534	.429	.439	.502	.432

TABLE 2 (continued)

County	Adjusted[a] Property Valuation as a Percent of State Total	Adjusted[a] Property Valuation as a Percent of State Total (corrected for sales ratio study)[b]	Retail Sales Tax Wealth as a Percent of State Total	Combined Index[c] (Columns 1 and 3)	Combined Index[c] (Columns 2 and 3)
Loudon	.401	.564	.409	.404	.512
McMinn	.804	1.007	.836	.815	.949
McNairy	.411	.402	.277	.366	.360
Macon	.343	.311	.196	.293	.272
Madison	1.448	1.417	1.942	1.615	1.595
Marion	.339	.393	.399	.359	.395
Marshall	.353	.402	.316	.340	.373
Maury	1.109	1.177	1.114	1.111	1.156
Meigs	.170	.157	.107	.149	.140
Monroe	.338	.528	.433	.370	.496
Montgomery	1.091	.833	1.645	1.279	1.108
Moore	.125	.124	.068	.106	.105
Morgan	.269	.307	.106	.214	.239
Obion	.771	.818	.710	.750	.781
Overton	.234	.272	.208	.225	.250
Perry	.134	.167	.062	.110	.132
Pickett	.064	.068	.044	.057	.060
Polk	.611	.564	.174	.463	.432

TABLE 2 (continued)

County	Adjusted[a] Property Valuation as a Percent of State Total	Adjusted[a] Property Valuation as a Percent of State Total (corrected for sales ratio study)[b]	Retail Sales Tax Wealth as a Percent of State Total	Combined Index[c] (Columns 1 and 3)	Combined Index[c] (Columns 2 and 3)
Putnam	.915	.754	.885	.905	.798
Rhea	.444	.449	.354	.414	.417
Roane	1.009	.810	1.439	1.155	1.023
Robertson	.517	.736	.524	.519	.664
Rutherford	1.738	1.533	1.692	1.722	1.587
Scott	.299	.323	.258	.285	.301
Sequatchie	.121	.135	.111	.118	.127
Sevier	.774	.747	1.044	.865	.848
Shelby	19.555	20.409	19.386	19.498	20.063
Smith	.278	.319	.234	.263	.290
Stewart	.186	.192	.085	.152	.156
Sullivan	4.972	3.498	3.629	4.517	3.542
Sumner	1.808	1.530	1.171	1.592	1.409
Tipton	.511	.695	.421	.481	.602
Trousdale	.148	.172	.112	.136	.152
Unicoi	.209	.279	.189	.202	.249
Union	.123	.183	.096	.114	.154

TABLE 2 (continued)

County	Adjusted[a] Property Valuation as a Percent of State Total	Adjusted[a] Property Valuation as a Percent of State Total (corrected for sales ratio study)[b]	Retail Sales Tax Wealth as a Percent of State Total	Combined Index[c] (Columns 1 and 3)	Combined Index[c] (Columns 2 and 3)
Van Buren	.062	.075	.024	.049	.058
Warren	.485	.598	.620	.531	.605
Washington	1.669	1.633	1.891	1.744	1.720
Wayne	.258	.330	.155	.223	.271
Weakley	.528	.623	.481	.512	.575
White	.274	.337	.298	.282	.324
Williamson	1.203	1.299	.776	1.058	1.122
Wilson	1.146	1.025	.763	1.016	.936

[a]Adjusted for TVA payments in lieu of property taxes (See Tennessee Education Finance Law of 1977).

[b]Source: See Comptroller of the Treasury, Division of Property Assessments, State of Tennessee, Real Estate Appraisal Sales Ratio Report for the Calendar Year 1976, May, 1978.

[c]Combined indices were computed utilizing a weighted average approach (See Formulae 2-4 in text).

The combined county ability measures are presented in Column 4 of Table 2. Comparison of Columns 3 and 4 reveal the impact of sales ratio corrections. The measures generated in this section represent adjustments both for assessment inequities and for an ability measure (local retail sales tax) not incorporated in the measure presently used. As such these measures afford the highest degree of equity of any alternative presented.

CHAPTER III

MEASURES OF COUNTY EFFORT TO SUPPORT EDUCATION

The purpose of this section is to develop and present objective measures of county fiscal effort to support the current operation and maintenance of programs of public education in Tennessee. Fiscal effort as measured in this study indicates the extent to which a county is actually utilizing its' property and retail sales tax ability for the purpose of education. The extent to which property and sales tax ability is actually being utilized is quantified by use of a ratio calculated by the following formula:

$$\text{Tax effort from base M} = \frac{\text{Actual revenue from base M}}{\text{Potential revenue from base M}} \times 100. \qquad (5)$$

For example if County A contained 8.432 percent of a particular state tax base but was raising 10.214 percent of the state total county revenue from that tax base for the current operation and maintenance of programs of education, then County A would earn an effort index computed from that tax base of (10.214/8.432) x 100 or 121.1. If County A had exercised the state fiscal average effort then County A would have raised only 8.432 percent of the state total county revenue from that base for education and would have earned an index of 100.0.

Effort indices based on each county's percentages of the following

five alternative wealth bases are presented herein:

1. Assessed property valuations adjusted by TVA payments in lieu of taxes,
2. Adjusted property valuations (as in 1 above) corrected by the most recent comprehensive sales ratio study conducted and published by the State of Tennessee, Division of Property Assessments,
3. Local retail sales tax ability,
4. Combined adjusted property valuations and local retail sales tax ability, and
5. Combined adjusted property valuations (corrected by sales ratio study as in 2 above) and local retail sales tax ability.

All yields both actual and potential are presented in per ADA form for comparative purposes only. Effort indices can be calculated without reducing the data to per ADA form.

County Effort Based Upon Measures of Property Wealth

Calculation of effort indices requires the mathematical comparison of actual and potential revenue yields. In this study the actual yields were as reported from county property revenue receipts for school taxes during the 1976-77 school year, delinquent prior year school taxes, pickup school property taxes, interest and penalty on delinquent school property taxes, and payments in lieu of 1976-77 county school property taxes.

Effort indices based upon two alternative measures of property wealth are calculated for each county. The first set of property effort indices utilizes county property assessed valuations adjusted by property equivalents

for TVA payments in lieu of taxes. The second set of property effort indices utilizes assessed property valuations adjusted for TVA payments in lieu of taxes and corrected to reflect the county median ratio of appraised property value to actual sales prices. Median sales ratios utilized were taken from the Real Estate Appraisal Sales Ratio Report published by the State of Tennessee, Comptroller of the Treasury, Division of Property Assessments, 1978.

Consequently two potential property tax yields per ADA were calculated for each county - one yield (PPTY/ADA) not corrected for the county median property sales ratio, and a second yield (potential corrected property tax yield - PCPTY/ADA) so corrected.

Calculation of PPTY required the use of the following formula:

$$\text{County A potential property tax yield (PPTY)} = \frac{\text{County A property valuation}}{\text{Total State property valuation}} \times \left\{ \begin{array}{l} \text{Total State:} \\ \text{School property taxes current year} + \\ \text{Delinquent school property taxes} + \\ \text{Pick-up school property taxes} + \\ \text{Interest and penalty on delinquent school property taxes} + \\ \text{Payments in lieu of school property taxes} \end{array} \right. \quad (6)$$

Potential property tax yields thus determined represent the potential tax yield from the property base available in each county of the State if the State fiscal average school property tax effort were exercised. The State fiscal average property tax rate for education based upon property valuations adjusted for TVA payments in lieu of taxes was 1.917 dollars per hundred

dollars of adjusted property valuation during the 1976-77 fiscal year. Each county's potential property tax yield was divided by that county's ADA to determine county PPTY/ADA. PPTY/ADA data are a function of each county's adjusted property valuation per ADA and the State fiscal average usage of this base for education.

For example, during the 1976-77 fiscal year Sumner County contained 1.808 percent of the State adjusted property value. A 1976-77 fiscal year State total of $220,304,980 in property tax revenue was raised by the counties for the current operation and maintenance of programs of education. Therefore if Sumner County had exercised the State fiscal average effort for education on the property tax base during the 1976-77 fiscal year then Sumner County would have raised (.01808 x $220,304,980) or $3,983,114 or $240.58 per ADA from the property tax base.

Disparity of per ADA county ability based on assessed valuations of property adjusted by TVA payments in lieu of taxes can be examined in Column 1 of Table 3. Individual county PPTY/ADA ranged $413.06 from a high of $495.61 in Polk County to a low of $82.55 in Hancock County, a ratio of 6 to 1. A State average PPTY/ADA of $210.62 was computed.

Potential property tax yields per ADA based upon measures of county adjusted property valuations corrected for county median ratios of appraised property valuations to actual sales prices as reported in the Real Estate Appraisal/Sales Ratio Report published by the State Division of Property Assessments in 1978 (PCPTY/ADA) were calculated in the same manner as PPTY/ADA by substituting county corrected property valuations in Formula 6.

The State fiscal average property tax rate based upon county property valuations corrected to reflect median sales ratio study data was 1.201 dollars per one hundred dollars of corrected property valuation during the 1976-77 fiscal year. Individual county PCPTY/ADA ranged $333.48 from a high of $457.48 in Polk County to a low of $124.00 in Grainger County, a ratio of 3.7 to 1. County per ADA property wealth disparity was reduced substantially by employing the median sales ratio corrections.

Comparison of Columns 1 and 2 of Table 3 illustrates the impact of correcting each county's assessed valuations of property adjusted for TVA payments in lieu of taxes by county median sales ratios. Hancock County with a per ADA potential yield of only $82.55 based on adjusted property valuations increased to $223.38 per ADA when median property sales ratio corrections were made. In other words Hancock County could raise $223.38 per ADA from the property base alone if (1) all county assessed property valuations were corrected for median property sales ratios and (2) the State fiscal average property rate for education of 1.201 dollars per hundred dollars of corrected assessed property value was levied.

Use of the uncorrected assessed property valuation measure adjusted only by TVA payments in lieu of taxes may provide an unfair advantage for counties assessing their property at less than an average percentage of value in relation to other counties by causing them to appear to have relatively less property wealth. By levying higher than average school property tax rates these same counties appear to be making high effort for education. Effort indices calculated after correcting adjusted property values for sales ratio analysis neutralizes the effects of low assessments.

TABLE 3

County Potential and Actual Revenue Per ADA From Measures
Of Property and Local Retail Sales Tax Ability

County	Property Revenue			Local Retail Sales Tax Revenue		Combined Columns		
	PPTY/ADA[a] (1)	PCPTY/ADA[a] (2)	Actual/ADA[b] (3)	PSTY/ADA[a] (4)	Actual/ADA[b] (5)	(1) & (4) (6)	(2) & (4) (7)	(3) & (5) (8)
Anderson	$137.44	$183.14	$307.51	$125.82	$ 3.66	$263.26	$308.96	$311.17
Bedford	302.24	217.39	210.90	123.97	66.98	426.21	341.36	277.88
Benton	151.46	231.60	196.56	89.39	41.32	240.85	320.99	237.88
Bledsoe	166.97	226.78	171.36	47.82	26.60	214.79	274.60	197.96
Blount	293.25	238.48	220.88	131.70	105.16	424.95	370.18	326.04
Bradley	257.93	212.57	201.75	127.17	109.95	385.10	339.74	311.70
Campbell	120.38	153.89	207.38	88.90	0.00	209.28	242.79	207.38
Cannon	129.87	262.15	161.42	73.22	39.48	203.09	335.37	200.90
Carroll	146.36	163.94	171.81	83.69	41.97	230.05	247.63	213.78
Carter	131.32	119.59	199.42	72.59	54.18	203.91	192.18	253.60
Cheatham	144.17	170.56	160.83	53.01	57.22	197.18	223.57	218.05
Chester	163.69	205.09	56.12	85.23	47.88	248.92	290.32	104.00
Claiborne	117.29	126.93	184.55	61.73	80.64	179.02	188.66	265.19
Clay	132.48	165.23	176.95	48.75	30.95	181.23	213.98	207.90
Cocke	174.41	209.98	174.09	86.11	64.63	260.52	296.09	238.72
Coffee	176.61	208.60	124.96	138.89	59.36	315.50	347.49	184.32
Crockett	190.07	191.99	125.72	51.24	47.16	241.31	243.23	172.88

TABLE 3 (continued)

County	Property Revenue			Local Retail Sales Tax Revenue		Combined Columns		
	PPTY/ADA[a] (1)	PCPTY/ADA[a] (2)	Actual/ADA[b] (3)	PSTY/ADA[a] (4)	Actual/ADA[b] (5)	(1) & (4) (6)	(2) & (4) (7)	(3) & (5) (8)
Cumberland	$261.98	$234.38	$241.96	$ 91.48	$ 56.06	$353.46	$325.86	$298.02
Davidson	462.50	445.56	481.69	259.97	350.99	722.47	705.53	832.68
Decatur	178.14	220.98	161.93	92.88	79.03	271.02	313.86	240.96
DeKalb	173.40	217.20	215.67	90.12	30.24	263.52	307.32	245.91
Dickson	161.50	198.00	173.30	94.52	121.31	256.02	292.52	294.61
Dyer	272.72	213.35	74.55	121.19	112.32	393.91	334.54	186.87
Fayette	207.36	244.92	101.91	43.95	37.31	251.31	288.87	139.22
Fentress	163.49	176.31	140.45	65.61	0.00	229.10	241.92	140.45
Franklin	172.98	209.67	188.94	87.93	49.81	260.91	297.60	238.75
Gibson	203.74	202.43	162.09	95.85	79.66	299.59	298.28	241.75
Giles	214.24	239.83	416.44	92.64	83.09	306.88	332.47	499.50
Grainger	146.54	124.00	119.02	37.13	21.81	183.67	161.13	140.83
Greene	224.22	206.58	217.51	92.82	80.80	317.04	299.40	298.31
Grundy	107.84	183.66	166.93	58.19	73.34	166.03	241.85	240.27
Hamblen	267.29	270.02	211.50	134.08	134.01	401.37	404.10	345.51
Hamilton	360.64	318.11	443.89	191.10	196.16	551.74	509.21	640.05
Hancock	82.55	223.38	91.49	33.13	21.06	115.68	256.51	112.55
Hardeman	173.94	164.80	172.46	66.48	58.63	240.42	231.28	231.09
Hardin	212.48	279.33	173.02	110.84	60.16	323.32	390.17	233.18
Hawkins	164.02	307.36	242.94	58.39	32.14	222.41	365.75	275.08

TABLE 3 (continued)

County	Property Revenue			Local Retail Sales Tax Revenue		Combined Columns		
	PPTY/ADA[a] (1)	PCPTY/ADA[a] (2)	Actual/ADA[b] (3)	PSTY/ADA[a] (4)	Actual/ADA[b] (5)	(1) & (4) (6)	(2) & (4) (7)	(3) & (5) (8)
Haywood	$241.59	$252.12	$160.59	$ 75.64	$ 56.56	$317.23	$327.76	$217.15
Henderson	132.49	173.04	202.64	92.97	38.13	225.46	266.01	240.77
Henry	241.10	279.58	272.13	126.76	72.51	367.86	406.34	344.64
Hickman	261.23	273.90	315.38	73.72	0.00	334.95	347.62	315.38
Houston	153.30	145.40	143.38	48.52	47.64	201.82	193.92	191.02
Humphreys	396.56	322.29	232.87	110.38	94.94	506.94	432.67	327.81
Jackson	173.92	201.60	175.94	51.24	29.34	225.16	252.84	205.28
Jefferson	213.80	279.21	230.98	68.10	78.27	281.90	347.31	309.25
Johnson	193.67	181.40	321.95	67.26	0.00	260.93	248.66	321.95
Knox	256.35	254.79	236.97	183.96	292.73	440.31	438.75	529.70
Lake	206.29	226.12	161.63	75.10	63.49	281.39	301.22	225.12
Lauderdale	156.17	191.48	138.84	71.62	39.27	227.79	263.10	178.11
Lawrence	155.88	212.66	160.29	97.56	96.14	253.44	310.22	256.43
Lewis	205.09	237.69	166.06	77.14	0.00	282.23	314.83	166.06
Lincoln	212.89	171.03	175.55	89.55	80.66	302.44	260.58	256.21
Loudon	163.54	230.01	277.83	85.34	82.54	248.88	315.35	360.37
McMinn	210.81	264.04	286.44	112.16	61.61	322.97	376.20	348.05
McNairy	208.68	204.11	225.48	71.96	0.00	280.64	276.07	225.48
Macon	291.64	264.43	186.38	85.27	74.05	376.91	349.70	260.43
Madison	234.11	229.10	110.46	160.65	145.55	394.76	389.75	256.01

TABLE 3 (continued)

County	Property Revenue			Local Retail Sales Tax Revenue		Combined Columns		
	PPTY/ADA[a] (1)	PCPTY/ADA[a] (2)	Actual/ADA[b] (3)	PSTY/ADA[a] (4)	Actual/ADA[b] (5)	(1) & (4) (6)	(2) & (4) (7)	(3) & (5) (8)
Marion	$150.21	$174.13	$244.07	$ 90.46	$ 54.84	$240.67	$264.59	$298.91
Marshall	221.56	252.32	300.72	101.48	113.92	323.04	353.80	414.64
Maury	247.59	262.77	195.45	127.25	139.03	374.84	390.02	334.48
Meigs	247.53	228.60	163.86	79.72	23.89	327.25	308.32	187.75
Monroe	135.14	211.11	153.24	88.58	89.90	223.72	299.69	243.14
Montgomery	164.38	125.51	152.21	126.81	209.39	291.19	252.32	361.60
Moore	326.28	323.67	296.27	90.82	0.00	417.10	414.49	296.27
Morgan	170.83	194.97	255.93	34.44	0.00	205.27	229.41	255.93
Obion	247.67	262.77	143.16	116.70	99.54	364.37	379.47	242.70
Overton	152.20	176.92	140.64	69.22	74.44	221.42	246.14	215.08
Perry	266.19	331.75	282.15	63.02	19.50	329.21	394.77	301.65
Pickett	187.00	198.68	93.54	65.78	61.98	252.78	264.46	155.52
Polk	495.61	457.48	528.78	72.22	76.07	557.83	529.70	604.85
Putnam	265.03	218.39	237.15	131.16	72.32	396.19	349.55	309.47
Rhea	222.66	225.17	304.15	90.83	44.88	313.49	316.00	349.03
Roane	257.04	206.34	163.54	187.57	83.12	444.61	393.91	246.66
Robertson	161.40	229.76	199.41	83.70	110.53	245.10	313.46	309.94
Rutherford	257.87	227.46	237.25	128.45	111.80	386.32	355.91	349.05
Scott	154.52	166.92	199.40	68.22	0.00	222.74	235.14	199.40
Sequatchie	150.77	168.22	138.07	70.22	101.43	220.99	238.44	239.50

TABLE 3 (continued)

County	Property Revenue			Local Retail Sales Tax Revenue		Combined Columns		
	PPTY/ADA[a] (1)	PCPTY/ADA[a] (2)	Actual/ADA[b] (3)	PSTY/ADA[a] (4)	Actual/ADA[b] (5)	(1) & (4) (6)	(2) & (4) (7)	(3) & (5) (8)
Sevier	$250.24	$241.51	$279.95	$172.71	$165.25	$422.95	$414.22	$445.20
Shelby	335.97	350.65	319.08	170.42	158.35	506.39	521.07	477.43
Smith	227.59	261.16	199.18	98.02	47.35	325.61	359.18	246.53
Stewart	252.48	260.62	218.57	59.04	68.20	311.52	319.66	286.77
Sullivan	389.79	274.23	400.53	145.57	125.57	535.36	419.80	526.10
Sumner	240.58	203.59	316.14	79.73	52.50	320.31	283.32	368.64
Tipton	157.12	213.69	133.23	66.23	38.02	223.35	279.92	171.25
Trousdale	313.81	364.70	208.50	121.51	26.43	435.32	486.21	234.93
Unicoi	141.07	188.31	206.18	65.27	0.00	206.34	253.58	206.18
Union	124.59	185.36	219.99	49.75	41.13	174.34	235.11	261.12
Van Buren	153.99	186.28	127.06	30.50	40.72	184.49	216.78	167.78
Warren	171.18	211.06	123.27	111.96	182.18	283.14	323.02	305.45
Washington	234.93	229.86	188.06	136.19	113.76	371.12	366.05	301.82
Wayne	193.66	247.70	160.62	59.53	32.71	253.19	307.23	193.33
Weakley	212.54	250.78	163.99	99.07	56.26	311.61	349.85	220.25
White	162.09	199.36	123.36	90.20	24.42	252.29	289.56	147.78
Williamson	262.57	282.45	329.19	86.33	70.18	348.90	368.78	399.37
Wilson	246.99	220.91	179.01	84.14	73.30	331.13	305.05	252.31

[a]Potential property tax yields from valuations of property adjusted for TVA payments in lieu of taxes (PPTY), corrected for median property sales ratios (PCPTY), and potential local sales tax yields (PSTY).

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[b]From data reported for the current operation and maintenance of programs of education, 1977 Annual Statistical Report of the Tennessee Department of Education.

Individual county property effort indices were calculated by expressing each county's reported property revenue receipts for the current operation and maintenance of programs of education as a percent of the county potential revenue from property (PPTY or PCPTY). The following formula was used for this computation:

County A property effort index base upon PPTY (or PCPTY) =

$$\frac{\text{County A} \left[\begin{array}{l} \text{School property taxes current year} + \\ \text{Delinquent school property taxes} + \\ \text{Pick-up school property taxes} + \\ \text{Interest and penalty on delinquent school property taxes} + \\ \text{Payments in lieu of school property taxes} \end{array}\right] \times 100}{\text{County A PPTY (or County A PCPTY)}} \qquad (7)$$

County effort indices based upon assessed valuations of property adjusted for TVA payments in lieu of taxes are listed in Column 1 of Table 4. County effort indices based upon adjusted property valuations corrected for median county property sales ratio analysis are listed in Column 2 of Table 4.

Comparison of each county's two indices reveals the impact of property sales ratio corrections on measures of property effort. Several counties with high effort indices because of low median property sales ratios experience a dramatic drop when indices were calculated with sales ratio corrections made.

Chester County recorded the lowest property effort indices based upon adjusted property valuations and upon adjusted property valuations with sales

ratio corrections. Chester County reported $56.12 per ADA as revenue receipts for the current operation and maintenance of programs of education during the 1977 fiscal year. If Chester County had made the State fiscal average property effort, $163.69/ADA and $205.09/ADA from the adjusted property values uncorrected and corrected for sales ratio studies, respectively, could have been realized.

Anderson County recorded the highest property effort index of 223.7 based on adjusted property values by raising $307.51/ADA actual revenue from property when a State fiscal average effort would have raised only $137.44/ADA. Giles County, however, recorded the highest property effort index of 173.6 based on adjusted property values corrected for sales ratio studies. These indices reflected not only high property tax rates for schools but also above average median sales ratios of property. Giles County raised $416.41/ADA from property tax levies for schools and would have raised only $239.43/ADA if the State fiscal average effort were made on the adjusted county property value corrected for median sales ratios.

County Effort Based Upon Measures of Retail Sales Tax Ability

Calculation of effort indices based upon county retail sales tax ability necessitated the computation of potential yields from the retail sales tax base. Since the State retail sales tax is collected at a constant 4.5 percent statewide, State sales tax collections in each county functioned as a measure of county ability. Each county's State retail sales tax collection was expressed as a percent of the State total. It was assumed that each county by making the State fiscal average effort for education on the local retail sales tax base could collect locally an

amount percentagewise equivalent to State sales tax collections in that county. For example, State retail sales tax collections in Dickson County represented .501 percent of the total State retail sales tax collections. If Dickson County had exercised the State fiscal average effort for education, then (.00501 x $112,721,281) or $564,734 total or $94.52/ADA would have been raised. A State total of $112,721,281 was raised from the local retail sales tax base for the current operation and maintenance of programs of education during the 1977 fiscal year. For purposes of this study the $94.52/ADA calculation was called potential sales tax yield per ADA or PSTY/ADA. PSTY for each county was calculated utilizing the following formula:

$$\text{County A PSTY} = \frac{\text{State retail sales tax collection in County A}}{\text{Total State retail sales tax collections}} \times \left[\begin{array}{l}\text{State total local option sales tax revenue for the current operation and maintenance of programs for education}\end{array}\right] \quad (8)$$

Each county's PSTY was divided by that county's ADA to compute PSTY/ADA. These data are listed in Column 4 of Table 3.

Local option retail sales tax effort indices were calculated by expressing each county's PSTY as a percent of the county's actual local option sales tax receipts reported for the current operation and maintenance of programs of education.

Effort indices for counties based on local option sales tax ability were calculated by the following formula:

$$\text{County A local option sales tax effort index} = \frac{\text{County A local option sales tax revenue for current operation and maintenance of programs of education}}{\text{County A potential local sales tax yield}} \times 100 \qquad (9)$$

Several counties reported no sales tax revenue for education but obviously utilized local option sales tax yields for capital outlay, debt retirement, etc. Numerous fiscal arrangements exist with respect to handling school revenue among the counties, however, it was beyond the scope of this study and perhaps any study to trace each dollar of revenue through each county fiscal office and specifically identify its' expenditure category.

Campbell, Fentress, Hickman, Johnson, Lewis, McNairy, Moore, Morgan, Scott, and Unicoi Counties reported no county revenue from the local sales tax for the current operation and maintenance of schools during the 1977 fiscal year and consequently had sales tax effort indices of 0.0. These same counties could have raised $88.90, $65.61, $73.72, $67.26, $77.14, $71.96, $90.82, $34.44, $68,22, and $65.27 per ADA, respectively, by exercising the State fiscal average effort on the local option sales tax for education during the 1977 fiscal year.

The highest local retail sales tax effort index was 165.1 recorded in Montgomery County where revenue of $209.39/ADA was reported. Montgomery

County would have realized only $126.81/ADA by making the State fiscal average effort from the local retail sales tax base.

Sales tax effort indices are recorded for each county in Column 3 of Table 4.

Combined Ability Effort Indices

Measures of county effort based upon combined measures of ability represent a more objective assessment of this fiscal aspect of a county's dedication to the support of programs of education than a measure based upon property or local retail sales tax ability alone. For example, a county may chose to levy a higher property tax rate but levy no local option sales tax. A county may utilize the entire yield from a local option sales tax levy for support of education but levy a very low property tax rate for this purpose.

The purpose of this section of the study is to compute two sets of indices of county effort for education based upon measures of combined property and local option sales tax ability. The first county index expressed the sum of actual reported per ADA revenue receipts from county property and county local option sales tax levies as a percent of potential county yields from the adjusted property valuation and local retail sales tax bases (see Formulae 6 and 8). This index represents the degree to which each county is utilizing these two bases for support of the current operation and maintenance of programs of education when compared with data representing a county making the State fiscal average effort.

For example, during the 1977 fiscal year Carter County reported $199.42/ADA and $54.18/ADA in county revenue receipts for the current operation and

maintenance of programs of education from the property and retail sales tax bases respectively. If Carter County had exercised the State fiscal average effort on these two bases (i.e. realized the same percentage of the State aggregate tax receipts as represented by measures of these bases in Carter County_ then $131.32/ADA and $72.59/ADA would have been realized respectively.

The combined effort indices were calculated utilizing the following mathematical format:

$$\frac{\$199.42 + \$54.18}{\$131.32 + \$72.59} \times 100 = 124.4$$

County effort indices based upon property valuations adjusted for TVA payments in lieu of taxes and local option sales tax ability are listed in Column 4 of Table 4. These effort indices ranged from a low of 41.8 in Chester County to a high of 162.8 in Giles County. Eighteen counties had combined effort indices of less than 75.0 which meant that these counties were exercising less than 75 percent of the State fiscal average effort for the current operation and maintenance of programs of education.

The second set of combined effort indices were based upon county tax effort from the local retail sales base and from the county adjusted property valuations corrected county median property for sales ratios. The writer believes these indices to most objectively measure the relative effort Tennessee Counties were making for the current operation and maintenance of programs of education during the 1977 fiscal year. This measure

does not reward counties with low median property sales ratios nor does it ignore effort made or not made on the local retail sales tax base.

Combined effort indices based upon these measures ranged from a low of 35.8 in Chester County to a high of 150.2 in Giles County. The four large metropolitan counties of Davidson, Hamilton, Knox, and Shelby had combined effort indices of 118.0, 125.7, 120.7, and 91.6, respectively. Complete county data on this measure of effort are listed in Column 5 of Table 4.

TABLE 4

Indices of County Effort to Support the Current Operation and Maintenance of Programs of Education in Tennessee

County	Property Effort			Combined Effort	
	Assessed Property Valuations Adjusted for TVA payments in lieu of Taxes	Adjusted Property Valuations Corrected for Median Sales Ratio[a]	Local Option Sales Tax Effort	Columns 1 & 3	Columns 2 & 3
Anderson	223.7	167.9	2.9	118.2	100.7
Bedford	69.8	97.0	54.0	65.2	81.4
Benton	129.8	84.9	46.2	98.8	74.1
Bledsoe	102.6	75.6	55.6	92.2	72.1
Blount	75.3	92.6	79.9	76.7	88.1
Bradley	78.2	94.9	86.5	80.9	91.8
Campbell	172.3	134.8	0.0	99.1	85.4
Cannon	124.3	61.6	53.9	98.9	59.9
Carroll	117.4	104.8	50.2	92.9	86.3
Carter	151.9	171.0	74.6	124.4	132.0
Cheatham	111.6	94.3	107.9	110.6	97.5
Chester	34.3	27.4	56.2	41.8	35.8
Claiborne	157.4	145.4	130.6	148.1	140.6
Clay	133.6	107.1	63.5	114.7	97.2
Cocke	99.8	82.9	75.1	91.6	80.6
Coffee	70.8	59.9	42.7	58.4	53.0

TABLE 4 (continued)

County	Property Effort: Assessed Property Valuations Adjusted for TVA payments in lieu of Taxes	Property Effort: Adjusted Property Valuations Corrected for Median Sales Ratio[a]	Local Option Sales Tax Effort	Combined Effort: Columns 1 & 3	Combined Effort: Columns 2 & 3
Crockett	66.1	65.5	92.0	71.6	71.1
Cumberland	92.4	103.2	61.3	84.3	91.5
Davidson	104.2	108.1	135.0	115.3	118.0
Decatur	90.9	73.3	85.1	88.9	76.8
DeKalb	124.4	99.3	33.6	93.3	80.0
Dickson	107.3	87.5	128.3	115.1	100.7
Dyer	27.3	34.9	92.7	47.4	55.9
Fayette	49.2	41.6	84.9	55.4	48.2
Fentress	85.9	79.7	0.0	61.3	58.1
Franklin	109.2	90.1	56.7	91.5	80.2
Gibson	79.6	80.1	83.1	80.7	81.1
Giles	194.4	173.6	89.7	162.8	150.2
Grainger	81.2	96.0	58.7	76.7	87.4
Greene	97.0	105.3	87.1	94.1	99.6
Grundy	154.8	90.9	126.0	144.7	99.4
Hamblen	79.1	78.3	100.0	86.1	85.5
Hamilton	123.1	139.5	102.7	116.0	125.7
Hancock	110.8	41.0	63.6	97.3	43.9

TABLE 4 (continued)

County	Property Effort: Assessed Property Valuations Adjusted for TVA payments in lieu of Taxes	Property Effort: Adjusted Property Valuations Corrected for Median Sales Ratio[a]	Local Option Sales Tax Effort	Combined Effort: Columns 1 & 3	Combined Effort: Columns 2 & 3
Hardeman	99.2	104.7	88.2	96.1	99.9
Hardin	81.4	61.9	54.3	72.1	59.8
Hawkins	148.1	79.0	55.0	123.7	75.2
Haywood	66.5	63.7	74.8	68.5	66.3
Henderson	153.0	117.1	41.0	106.8	90.5
Henry	112.9	97.3	57.2	93.7	84.8
Hickman	120.7	115.1	0.0	94.2	90.7
Houston	93.5	98.6	98.2	94.7	98.5
Humphreys	58.7	72.3	86.0	64.7	75.8
Jackson	101.2	87.3	57.3	91.2	81.2
Jefferson	108.0	82.7	114.9	109.7	89.0
Johnson	166.2	177.5	0.0	123.4	129.5
Knox	92.4	93.0	159.1	120.3	120.7
Lake	78.4	71.5	84.5	80.0	74.7
Lauderdale	88.9	72.5	54.1	78.2	67.7
Lawrence	102.8	75.4	98.5	101.2	82.7
Lewis	81.0	69.9	0.0	58.8	52.8
Lincoln	82.5	102.6	90.1	84.7	98.3
Loudon	169.9	120.8	96.7	144.8	114.3

TABLE 4 (continued)

County	Property Effort			Combined Effort	
	Assessed Property Valuations Adjusted for TVA payments in lieu of Taxes	Adjusted Property Valuations Corrected for Median Sales Ratio[a]	Local Option Sales Tax Effort	Columns 1 & 3	Columns 2 & 3
McMinn	135.9	108.5	54.9	107.8	92.5
McNairy	108.1	110.5	0.0	80.3	81.7
Macon	63.9	70.5	86.8	69.1	74.4
Madison	47.2	48.2	90.6	64.9	65.7
Marion	162.5	140.2	60.6	124.2	113.0
Marshall	135.7	119.2	112.3	128.4	117.2
Maury	78.9	74.4	109.3	89.2	85.8
Meigs	66.2	71.7	30.0	57.4	60.9
Monroe	113.4	72.6	101.5	108.7	81.1
Montgomery	92.6	121.3	165.1	124.2	143.3
Moore	90.8	91.5	0.0	70.9	71.5
Morgan	149.8	131.3	0.0	124.7	111.6
Obion	57.8	54.5	85.3	66.6	64.0
Overton	92.4	79.5	107.5	97.1	87.4
Perry	106.0	85.1	30.9	91.6	76.4
Pickett	50.0	47.1	94.2	61.5	58.8
Polk	106.7	115.6	105.3	108.4	114.2
Putnam	89.5	108.6	55.1	78.1	88.5
Rhea	136.6	135.1	49.4	111.3	110.5

TABLE 4 (continued)

County	Property Effort			Combined Effort	
	Assessed Property Valuations Adjusted For TVA payments in lieu of Taxes	Adjusted Property Valuations Corrected for Median Sales Ratio[a]	Local Option Sales Tax Effort	Columns 1 & 3	Columns 2 & 3
Roane	63.6	79.3	44.3	55.5	62.6
Robertson	123.6	86.8	132.1	126.5	98.9
Rutherford	92.0	104.3	87.0	90.4	98.1
Scott	129.0	119.5	0.0	89.5	84.8
Sequatchie	91.6	82.1	144.5	108.4	100.4
Sevier	111.9	115.9	95.7	105.3	107.5
Shelby	95.0	91.0	92.9	94.3	91.6
Smith	87.5	76.3	48.3	75.7	68.6
Stewart	86.6	83.9	115.5	92.1	89.7
Sullivan	102.8	146.1	86.3	98.3	125.3
Sumner	131.4	155.3	65.9	115.1	130.1
Tipton	84.8	62.4	57.4	76.7	61.2
Trousdale	66.4	57.2	21.8	54.0	48.3
Unicoi	146.2	109.5	0.0	99.9	81.3
Union	176.6	118.7	82.7	149.8	111.1
Van Buren	82.5	68.2	133.5	90.9	77.4
Warren	72.0	58.4	162.7	107.9	94.6
Washington	80.1	81.3	83.5	81.3	82.5
Wayne	82.9	64.8	55.0	76.4	62.9

TABLE 4 (continued)

County	Property Effort: Assessed Property Valuations Adjusted For TVA payments in lieu of Taxes	Property Effort: Adjusted Property Valuations Corrected for Medial Sales Ratio[a]	Local Option Sales Tax Effort	Combined Effort: Columns 1 & 3	Combined Effort: Columns 2 & 3
Weakley	77.2	65.4	56.8	70.7	63.0
White	76.1	61.9	27.1	58.6	51.0
Williamson	125.4	116.6	81.3	114.5	108.3
Wilson	72.5	81.0	87.1	76.2	82.7

[a]County median property sales ratios utilized were computed in Real Estate Appraisal/Sales Ratio Report, State of Tennessee, Division of Property Assessments, 1978.

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